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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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23494	7590	09/06/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			CHANG, EDITH M	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	
			2637	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/595,561

Applicant(s)

DABAK ET AL.

Examiner

Edith M. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11,24-36,49-67,69-71 is/are rejected.
- 7) ☒ Claim(s) 12-23,37-48,68 and 72 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments/Remarks

1. Applicant's arguments filed on April 26, 2005, have been fully considered but they are not persuasive. The rejections of claims 1-11, 24-36, 49-67 are 69-71 are upheld, the rejections of claims 12-23, 37-48, 68 and 72 are withdrawn.

Drawings

2. Figure 1, 2 and 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 51-57, 59-60 and 61-63 are objected to because of the following informalities:

Claim 51 & Claim 59, lines 2-3: "the a subset of bits" is suggested changing to "a subset of bits", since it is either the subset of bits or a subset of bits.

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Claim 54 & Claim 61, line 2: "the subset of bits" should be "the repeated subset of bits".

Claims 52-53, 55-57, 60 and 62-63 are directly or indirectly dependent on objected claims 51, 54, 59 and 61.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 4-9, 11, 24-28, 30-34, 36, 49-53, 55-56, 58-60 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamal et al. (US 5,930,366) in view of Norte] (TSGR1#2(99)090 and TSGR1#5(99)684).

To **claims 1-2, 27-28, 50 & 58**, Jamal et al. teaches asynchronous CDMA system (column 2 lines 50-52) with cell-specific long code (column 1 lines 17-21) and its cell acquisition method in FIG.7, wherein the base station (112) encodes and transmit the frame (FIG.5) with the primary synchronization code (PSC, Cp) in each slot in the pilot channel 132 of acquisition channels, and secondary synchronization code (SSC, Cs) in the combined channel 140 of acquisition channels (stated in column 5 lines 2-6), wherein the frame is divided into fifteen slots synchronized with the synchronization

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channels (SCH) comprising the Primary SCH (pilot 132) and Secondary SCH (combined 140) shown in FIG.5, but Jamal et al. does not explicitly indicate structuring the synchronization codes and a repeated subset of bits of the sequence to which in response providing both the PSC and the SSC.

Regarding to the synchronization codes structure, the Nortel teaches the known and published structuring of the synchronization codes, PSC and SSC, in page 3 lines 20-24 (the paragraph before the 3.Analysis, TSGR1#2), wherein the PSC uses a hierarchical sequence (the first sequence, page 2 the last paragraph to page 3 the first line of TSGR1 #2), the SSC is constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of which the code words selected from the Hadamard sequence) and a hierarchical sequence (the third sequence) also used for the PSC (from the first sequence). The Hadamard sequence is different for each SSC and orthogonal with each other, the Hadamard/second sequence consisting fifteen code words (Cs in the frame) are selected from the different orthogonal Hadamard sequences. As Jamal performing the cell searching of the asynchronous CDMA system, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the known synchronous codes structuring taught by Nortel in Jamal's base station to generate the synchronous codes to accommodate the 3GPP standards and to provide a better mutually orthogonal synchronous codes for improving the cell site search performance (Nortel page 4 lines 14-17 or the last three lines of the third paragraph TSGR1#2).

Regarding to the composition of the (third hierarchical) sequence provided to SSC, the Nortel teaches the known and published composition of the SSC sequences in page 7, wherein the (third) hierarchical sequences is constructed as the first sequence (page 7, lines 4-5). Hence, the third sequence comprises a repeated subset of bits from the first sequence.

To **claims 4-5, 30, 31, 53, 56, 60, & 62**, the Jamal's apparatus and method with modified SCH codes taught by Nortel teaches in page 3 lines 20-24, the SSC is constructed by a Hadamard sequence as the second sequence of which the code words selected from the Hadamard sequence), and in FIG. 5 ('366) the frame is divided into fifteen slots synchronized with the synchronization channels (SCH) comprising the Primary SCH (pilot 132) and Secondary SCH (combined 140) with code words of SSC.

To **claims 6-9 & 32-34**, the Jamal's apparatus and method with modified SCH codes taught by Nortel teaches the Hadamard sequences selected from a set of 256 cyclic hierarchical sequences (Walsh sequences) with a defined order (Figure 4 on page 6 of Nortel) that the sixteen sequence (in sixteen slots) selected every sixteenth in the defined order, wherein the $c_s^{i,1}$ and $c_s^{i+1,1}$ (or $c_s^{i,2}$ and $c_s^{i+1,2}$; ..., $c_s^{i,16}$ and $c_s^{i+1,16}$) is selected every sixteenth in the defined order.

To **claims 11, 25-26, 36, 49, 52, & 55**, the Jamal's apparatus and method with modified SCH codes taught by Nortel teaches the SSC is constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of which the code words selected from the Hadamard sequence) and a hierarchical sequence also

used for the PCS (third sequence is from the first sequence) in page 3 lines 20-24 of TSGR1#2(99)090.

To **claim 24**, Jamal et al. discloses the transmitter comprising a CDMA Transmitter (FIG.7 112 the base stations).

To **claims 51 & 59**, the Jamal's apparatus and method with modified SCH codes taught by Nortel teaches the SSC code sequence comprising 32 repeated instances of the a subset of bits from the first code sequence (Figure 4, page 6, and page 7 lines 4-6, the bits from X_1 and X_2 and repeated in 32 groups, TSGRI#2(99)090).

6. Claims 3, 10, 29, 35, 54, 57, 61, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamal et al. (US 5,930,366) in view of Nortel (TSGR1#2(99)090 and TSGR1#5(99)684) as applied to claims 1, 27, 50, and 58 above, and further in view of Popovic' (US 6,567,482 B1).

To **claims 3, 10, 29, 35, 57 & 63**, Jamal et al. does not explicitly specify the Golay sequence and the details of constructing SSC, however Ponovic' teaches the PSC is a Golay complementary sequence (column 7 lines 9-15, column 19 line 67-column 20 line 3) and the 256 Walsh/Hadamard sequences have a defined order (column 20 lines 25-40 '482); and wherein the plurality of Hadamard sequences comprise seventeen Hadamard sequences selected as every eighth sequence in the defined order (column 20 lines 25-40, column 21 line 20-column 22 line 5, wherein the permutation defined in equation (1) at column 10 lines 25-55 as every eighth sequence in the defined order).

As Jamal et al. teaches the slot timing of the PSC in the pilot channel and frame timing information of the SSC is derived from the associated pilot code (column 7 line 59-column 8 line 1) in synchronization of the asynchronous CDMA and Popovic' providing a method for efficient synchronization via synchronization channels with PSC and SCC, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Popovic's teaching (Fig. 5 '482) that PSC comprising a Gloay sequence implemented in the Jamal et al.'s method to optimize the cell search codes with a better MAS value (column 19 lines 5-10). The combined/modified method/apparatus provides accurate and efficient synchronization between radio transceivers (Abstract).

To **claims 54 & 61**, the combined/modified system/method of Jamal et al., Popovic' discloses each of the second and third code sequences comprise 256 bits (410 Fig. 12, column 4 lines 40-50 '482), and wherein the subset of bits from the first code sequence comprises a fourth code sequence of bits and a complement of the fourth code sequence of bits ($a(k)$ & $b(k)$) Fig.5 are the fourth code sequence of bits, column 10 lines 10-50, wherein the $a_n(k)$ and $b_n(k)$ are two complementary sequence of the first sequence '482).

7. Claims 64-67 and 69-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamal et al. (US 5,930,366) in view of Nortel (TSGRI#2(99)090, TSGR1#5(99)684) and Popovic' (US 6,567,482 131).

To claims **64 & 69**, Jamal et al. teaches asynchronous CD-CDMA system (column 2 lines 50-52) with cell-specific long code (column 1 lines 17-21) and its cell acquisition method in FIG. 7, wherein the base station encodes and transmit the frame with the primary synchronization code (PSC, C_p) in each slot in FIG. 5 in the pilot channel 132 of acquisition channels, and secondary synchronization code (SSC, C_s) in the combined channel 140 of acquisition channels (stated in column 5 lines 2-6), wherein the frame is divided into fifteen slots synchronized with the synchronization channels (SCH) comprising the Primary SCH (pilot 132) and Secondary SCH (combined 140) shown in FIG. 5, but Jamal et al. does not explicitly indicate structuring the synchronization codes.

However the Nortel teaches the known and published structuring of the synchronization codes, PSC and SSC, in page 3 lines 20-24, wherein the PCs uses a hierarchical sequence (the first sequence), the SSC is constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of which the code words selected from the Hadamard sequence)'and a hierarchical sequence also used for the PCs (third sequence is from the first sequence). The Hadamard sequence is different for each SSC and orthogonal with each other, the second sequence consisting fifteen code words are selected from the different orthogonal Hadamard sequences. As Jamal performing the cell search of the asynchronous CDMA system, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the known synchronous codes structuring taught by Nortel in Jamal's base station to generate the synchronous codes to accommodate the 3GPP standards and to provide a

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better mutually orthogonal synchronous codes for improving the cell site search performance (Nortel page 4 lines 14-17 or the last three lines of the third paragraph); and Popovic' teaches the Golay pair of the PCS (column 20 lines 30-38) comprising subset of bits from the first code sequence comprises a fourth code sequence of bits and a fifth sequence wherein the complement of the fourth code sequence of bits is the fifth sequence (a(k) Fig. 5 is the fourth code sequence of bits, b(k) is the fifth code sequence; column 10 lines 10-50, wherein the $a_n(k)$ and $b_n(k)$ are two complementary sequence of the first sequence '482). As Jamal et al. teaches the slot timing of the PSC in the pilot channel and frame timing information of the SSC is derived from the associated pilot code (column 7 line 59-column 8 line 1) in synchronization of the asynchronous CDMA and Popovic' providing a method for efficient synchronization via synchronization channels with PSC and SCC, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Popovic's teaching (Fig.5 '482) that PSC comprising a Golay sequence implemented in the Jamal et al.'s method to optimize the cell search codes with a better MAS value (column 19 lines 5-10). The combined/modified method/apparatus provides accurate and efficient synchronization between radio transceivers (Abstract).

To **claim 65**, in the Jamal's modified apparatus and method, Nortel teaches the SSC is constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of which the code words selected from the Hadamard sequence) and a hierarchical sequence also used for the PCS (third sequence is from the first sequence) in page 3 lines 20-24 of TSGR1#2(99)090.

To **claims 66 & 70**, in the Jamal's modified apparatus and method, Nortel teaches in page 3 lines 20-24, the SSC is constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of which the code words selected from the Hadamard sequence) and a hierarchical sequence also used for the PCS (third sequence is from the first sequence), and in FIG.5 ('366) the frame is divided into fifteen slots synchronized with the synchronization channels (SCH) comprising the Primary SCH (pilot 132) and Secondary SCH (combined 140) with code words of SSC.

To **claims 67 & 71**, in the Jamal's modified apparatus and method, Nortel teaches the Hadamard sequences selected from a set of 256 cyclic hierarchical sequences (Walsh sequences) with a defined order (Figure 4 on page 6 of Norte]) that the sixteen sequence (in sixteen slots) selected every sixteenth in the defined order, wherein the $c_s^{i,1}$ and $c_s^{i+1,1}$ (or $c_s^{i,2}$ and $c_s^{i,2}, \dots; c_s^{i,16}$ and $c_s^{i+1,16}$) is selected every sixteenth in the defined order.

Allowable Subject Matter

8. Claims 12-23, 37-48, 68 and 72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a encoder for providing a primary synchronization code and a

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secondary synchronization code of wireless system and its method as a whole, the combination of elements and features, which includes a circuit for providing the secondary synchronization code (SSC) in response to a second sequence and a third sequence, wherein the third sequence consists of a repeated subset of bits from the first sequence which in response to the primary synchronization code (PSC) provided, and the PSC comprises a 256-bit sequence {A, B, A, B, A, B, -A, -B, -A, -B, A, B, -A, -B, -A, -B, A, B, A, B, A, B, -A, -B, A, B, -A, -B, A, B, A, B} or {C, C, C, -C, C, C, -C, -C, C, -C, C, -C, -C, -C, -C, -C, -C} wherein C = {A, -B} as recited in the claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sriram et al. (US 6,831,929 B1) describes the circuit to generate the PSC and SSC from three sequences and the repeated subset bits structure of the sequence (column 2, lines 4-19).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
August 24, 2005


YOUNG T. TSE
PRIMARY EXAMINER